



National Intrepid Center of Excellence

Cutting Edge Interdisciplinary Care for TBI & PH

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Intrepid Fallen Heroes Fund



- The Intrepid Fallen Heroes Fund (IFHF) continues the mission of helping US military service members and veterans begun in 1982 by Zachary and Elizabeth Fisher, the founders of the Fisher House Foundation and the Intrepid Sea-Air-Space Museum in New York Harbor



- The successful fundraising efforts of Arnold Fisher have generated philanthropic contributions to the IFHF for advanced medical facilities dedicated to military service members



- The Center for the Intrepid (CFI) opened at Brooke Army Medical Center in 2007 for amputation prostheses and functional limb loss care





National Intrepid Center of Excellence



Location: NNMC campus, Bethesda, MD

Lot Size: ~3 AC

Building Size: ~72,000 SF

Number of Stories: 2

Number of Personnel: ~111

Major Diagnostic / Rehabilitation Equipment:

- Magnetic Resonance Imaging (3-T) / Functional MRI / Diffusion Tensor Imaging
- Positron Emission Tomography with Computed Tomography (PET/CT)
- Magneto encephalography (MEG) Scanner
- Trans-Cranial Doppler Ultrasound
- Fluoroscopy
- CAREN (Computer Assisted Rehabilitation Environment)





NICoE Vision & Mission

Vision: The NICoE is an instrument of Hope, Healing, Discovery, and Learning

Mission: To be the leader in advancing world-class psychological health and traumatic brain injury treatment, research, and education

Key Principles:

- A model of interdisciplinary diagnostic and treatment planning in a family focused, collaborative environment which promotes physical, psychological and spiritual healing
- A research hub with a unique patient base and the most current technical and clinical resources for initiating innovative pilot studies designed to advance evaluation and treatment in warriors with the complex interaction of TBI and PH and who are not responding to conventional therapy elsewhere in the MHS
- An education and training venue for the dissemination of next generation standards of care and resilience to providers as well as Service Members and families
- An innovative platform committed to long-term Warrior follow-up and family contact



NICoE within the DoD



The NICoE is a “Game Changer” for the DoD’s TBI and PH capability

- A premier institute for holistic healthcare dedicated to research, diagnosis, and treatment of military personnel and veterans suffering from Traumatic Brain Injury (TBI) and Psychological Health (PH) conditions.
- A team, nested under a military COC, which incorporates renown civilian and military clinical prowess in areas of research, patient treatment, and collaboration.
- A collaborative and innovative DOD center of gravity for TBI/PH Research and Education; the NICoE leverages the best progressive research and advancement throughout the academic, private and military sectors.
- One of the world’s most aesthetically designed buildings, the NICoE is leveraged as a signal of hope and commitment to all who walk through its doors.



NICoE Research

- NICoE's research goals are focused on:
 - Serving as a **collaborative research hub** by leveraging advanced technical and clinical resources and providing an environment for sharing information across military, federal, academic and industry partners. **Subject Matter Expert symposia to discuss research.**
 - **Designing and implementing pilot studies** which advance novel diagnostic and treatment strategies of TBI and PH conditions.
 - **Establishing a robust research database** and specimen repository for advanced bio-informatic analysis by military and civilian academic and industry research partners.
 - **Research Protocols** - Cooperation with DoD Research Profile.
- NICoE's planned collaborations include the Department of Veterans Affairs, Defense Centers of Excellence, Uniformed Services University of the Health Sciences, National Institutes of Health, Walter Reed Army Medical Center,



Research Projects

- NICoE will serve as a research hub, contributing significantly through the development of a Common Data Elements Database (CDE dB) for TBI and PH
(See slide 36 for further details of Research Data Registry)
- The NICoE will review promising innovations and technologies in the diagnosis and treatment of TBI and PH conditions and develop pilot research projects
- Established relationship with NNMC IRB process
- Initial research protocols:
 - National Capital Consortium TBI Neuroimaging Core Project (325 Subjects)
 - HBO₂ research protocol
- Protocols currently under development:
 - Virtual Reality research protocols for innovative assessments of TBI and PH conditions



Research Projects

- All patients accepted to the NICoE will be offered an opportunity to participate in research protocols once at the Center
- Willingness to participate in research will NOT influence acceptance to the Center nor alter the clinical care delivery.
- Research protocols that encompasses the spectrum of TBI and PH disorders will be engaged at the NICoE and will recruit from populations in addition to and/or outside those accepted for the two to three week intensive evaluation, treatment and long term treatment planning.
- Description of protocols being engaged at the NICoE and in collaboration at other sites will be listed on the NICoE Website (Currently under development)



Training and Education

- NICOE's Training and Education (T&E) mission is to serve as:
 - An education catalyst for stimulating research and discovery
 - An agent for advancing clinical practices
 - A platform for disseminating the next generation of standards of care for patients with complex TBI and PH to providers, service members and their families
- T&E at the NICOE is based on four key components:
 - Warrior, Family, and Leader Education Resources
 - Interprofessional Staff Development
 - Continuing Health Professions Education
 - Student, Resident and Fellow Education



NICoE Roundtable – 29 Oct 2010

- In keeping with the NICoE Mission, the Training and Education Directorate hosted the “Area Health Education Center Roundtable” on 29 October 2010, including representatives from the following organizations:
 - Defense Centers of Excellence (DCoE)
 - DCoE TBI Education Collaboration
 - National Center for Telehealth and Technology (T2)
 - Department of Veterans Affairs (VA)
 - Area Health Education Centers (AHEC)
 - VA Medical Center (VAMC), Salisbury, NC
 - Deployment Health Clinical Center (DHCC)
 - National Guard Bureau, J-1
 - Brain Injury Association of America
 - Center of Excellence for Remote and Medically Under-Served Areas (CERMUSA)
 - BrainLine.org (WETA/PBS)
 - Health Resources and Services Administration (HRSA)
 - Defense and Veterans Brain Injury Center (DVBIC)
 - Uniformed Services University of the Health Sciences (USUHS)
 - Headquarters Air Force (A9L)
 - University of California, San Francisco (UCSF) at Fresno
 - John A. Burns School of Medicine (JABSOM), University of Hawaii at Manoa
 - Mountain Area Health Education Center (MAHEC), University of Maryland at Baltimore
 - University of Minnesota
 - Oklahoma State University Center for Health Sciences
 - Virginia Commonwealth University
 - University of Massachusetts Medical School
 - University of Texas Medical Branch
 - Medical University of South Carolina



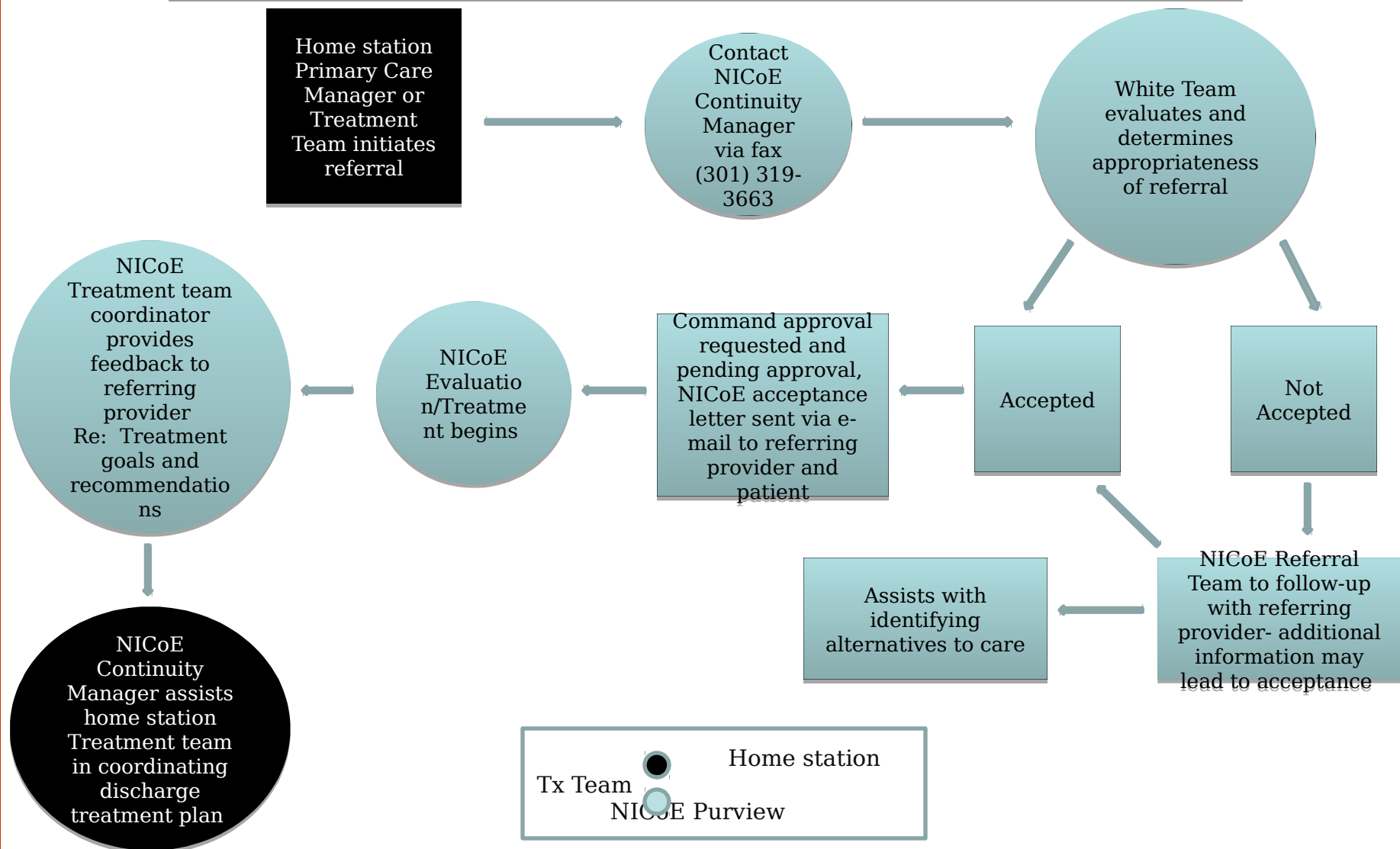
Outreach / Network

- A NICoE Network will be a virtual or physical connection to Military Treatment Facilities and major military clinics engaged in the care of wounded Warriors with PH / TBI issues. The Network will enable sharing of health data, clinical diagnostic and treatment protocols, outcome assessment measures and best practices
- Projected capabilities of NICoE networks include:
 - Extension of treatment capabilities and clinical practice guidelines
 - Liaison personnel and workspace
 - Free standing
 - Incorporated in another facility
 - Key to operationalizing and maintaining a “string” to post-NICoE patients
- A web of networks will elevate and expand the quality of care for PH / TBI and establish standards for future clinical, research and educational projects through the rapid and timely exchange of information



NICoE Referral Process

(Current referral through Fax; Web based portal in development)





NICoE Spirit of Hospitality



Continuity Support Services/Continuity Manager Unique Roles:

- *Initial contact* with the referring source
- Inclusion criteria evaluated with Medical and Research members
- *Personal referral process* for those not meeting inclusion criteria
- Medical record and imaging studies obtained and assembled
- Present Warrior and Family records to medical screening team
- *Contact Family* – initiate invitation and travel process
- Participate in the initial on site interview with evaluation and treatment planning team
- *“Warm” Hand off* to Family Agenda Coordinator
- Re-engage at the treatment planning phase
- *Begin the continuity treatment planning* with Warrior’s home provider and case managers
- Life long follow up



NICoE Employment Opportunities

- 111 Personnel when fully staffed
 - 43 Currently On-Board
 - 15 Uniformed Staff On-Board
 - 28 Civilian Staff On-Board
- Still recruiting for a variety of civilian positions
 - For information on opportunities, please contact us at NICoE@med.navy.mil



Summary

22 Nov "Tank" Brief



NICoE will change lives by:

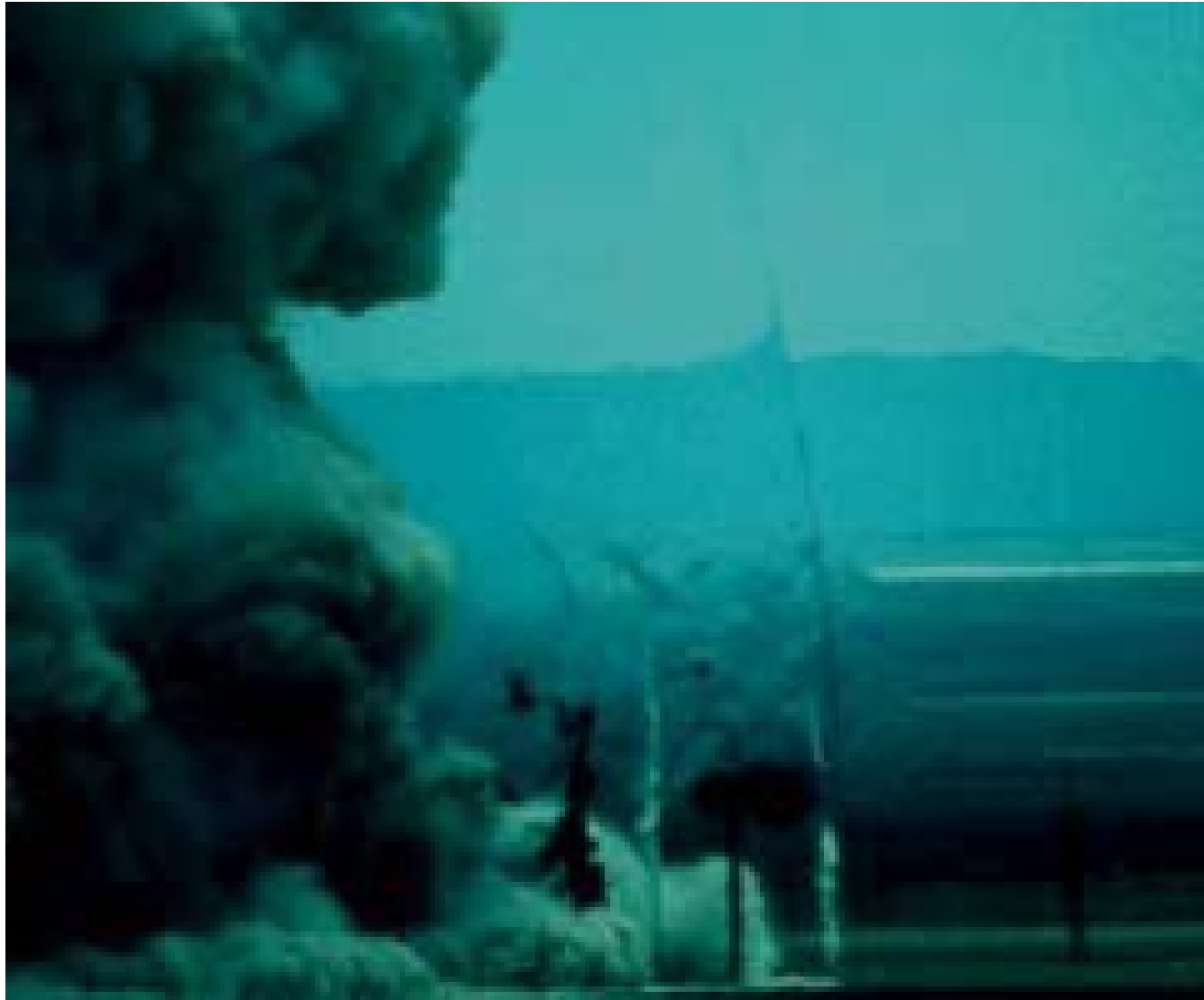
- Leveraging clinical protocol research with scientific rigor applying traction from recruiting to training to combat to post-discharge.
- Serving as an epicenter of collaboration and symposia by harnessing the **unique** and collective issues of wartime TBI/PTS/PH in concert with other world class COE's.
- Creating a one-stop referral cell for WII's to optimize capacity, availability, and applicability of other COE's; (e.g., Rehabilitation Institute of Chicago, UCLA, Cleveland Clinic, University of Pittsburgh Medical Center, etc.).

America's shock trauma care has improved as a result of combat and wartime DoD experience . The NICoE will become an epicenter of research and collaboration also elevating care and outcomes in TBI/PH conditions among Warriors and all our citizens. We will change lives.



Medical Imperative

- Excess of 300,000 warriors with TBI and/or PH disturbances.
- Complex interaction between TBI and PHI resulting in new clinical entity or more virulent form of TBI and PH issues.
- Failure of recovery despite conventional therapy
- Challenge: Identify Pathophysiology, Natural Hx, Diagnostic Tools, Treatment & Disseminate information





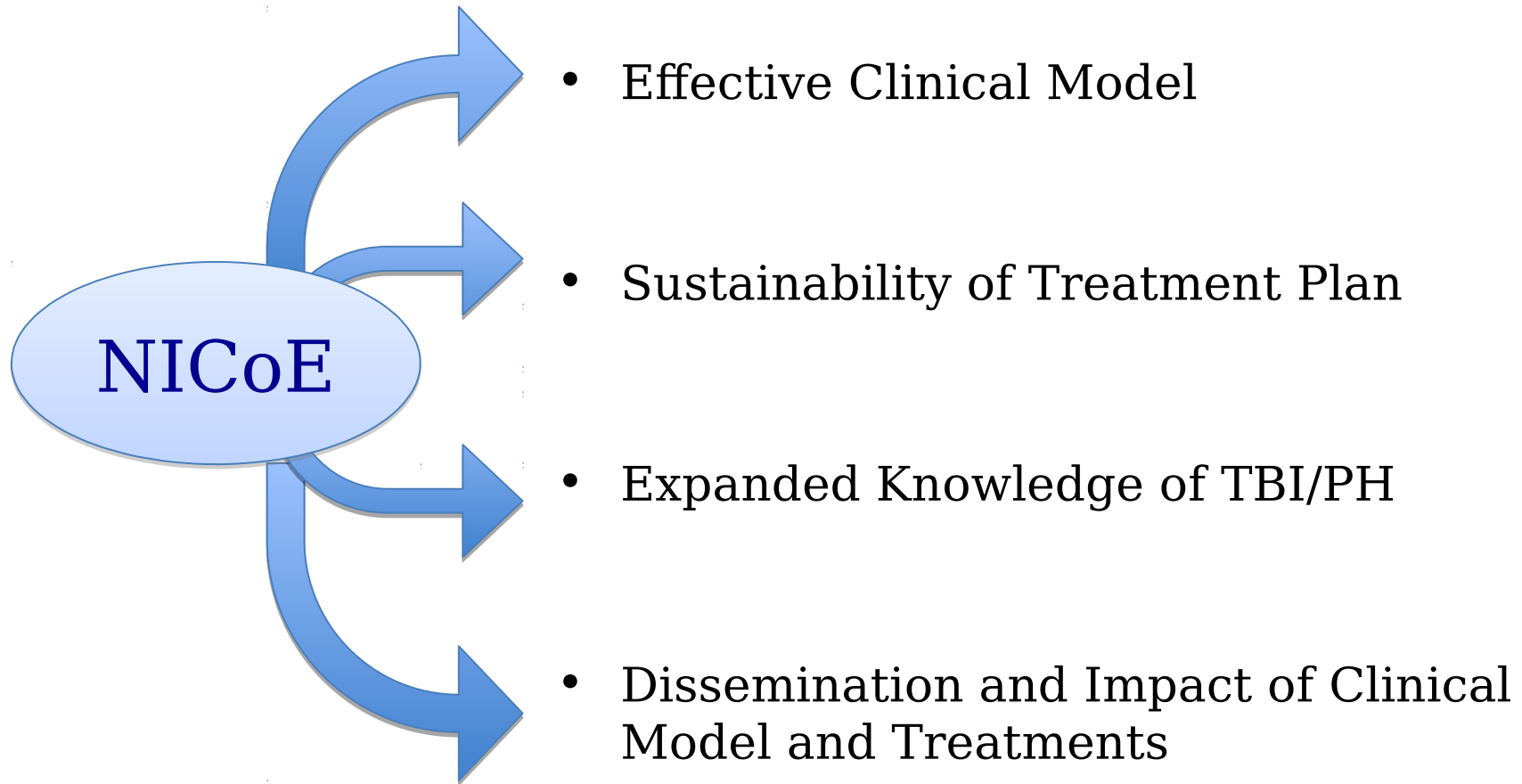
IED: Improvised Explosive Device





NICoE Charge

(To address mission of Clinical Care, Research and Education)





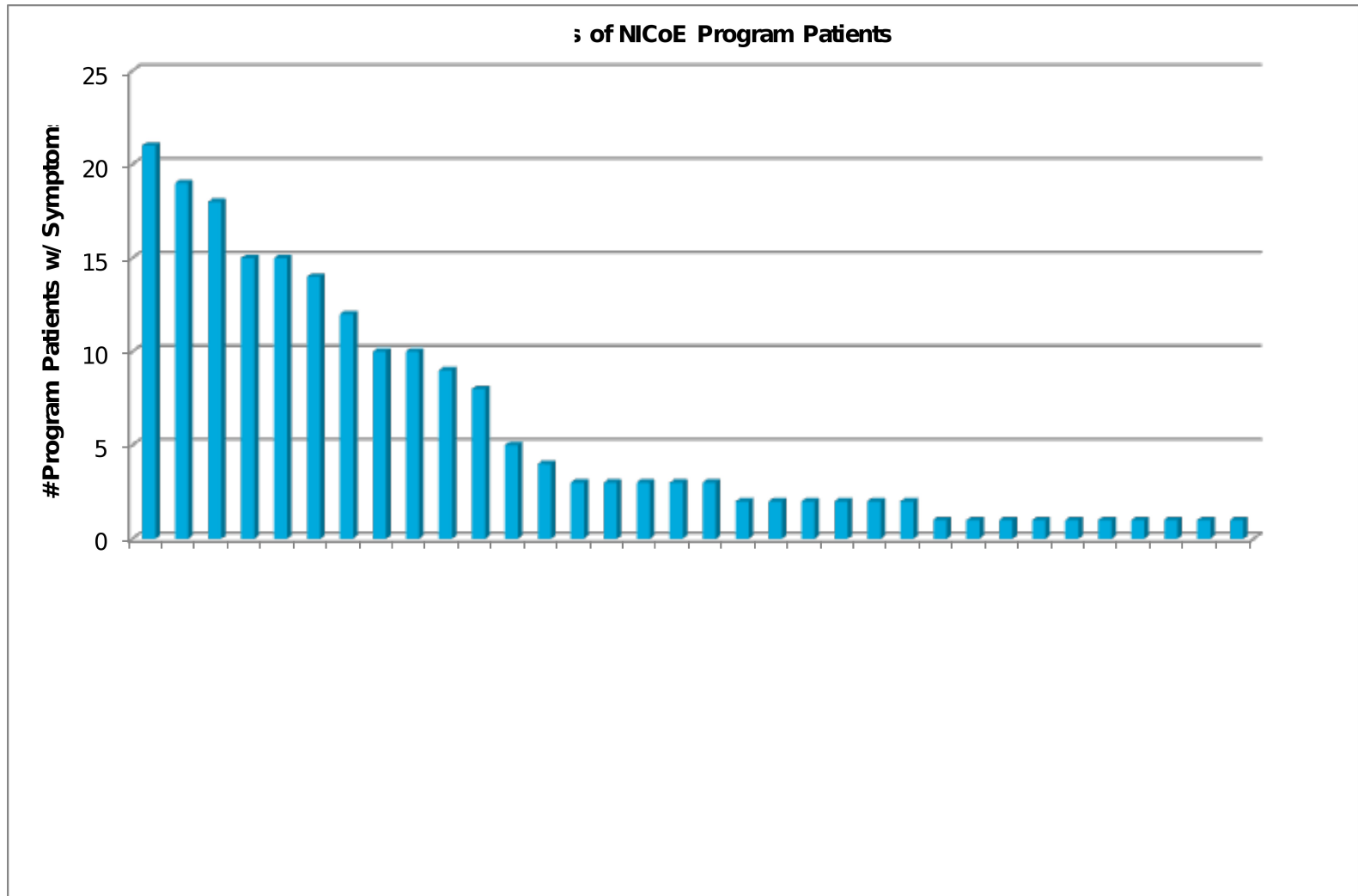
Patient Profile

- Active duty service members with TBI complicated by other impairing PH conditions, who are not responding to conventional therapy and who have been unable to return to full duty & interpersonal relationships
- The primary profile of service members who will be seen at the NICOE will include:
 - Active Duty
 - Mild to moderate TBI and PH (OEF/OIF/OND related)
 - Persistence of symptoms despite "defined" treatment
 - No active/untreated substance abuse disorder (no potential for withdrawal)
 - Capable of participating in an Intensive Outpatient Level of Care, including:
 - Not a danger to self or others
 - Not in need of services requiring a level of nursing care or medical monitoring higher than what can safely be provided in an outpatient setting



NICoE Patient Statistics

(Initial 21 Warriors - 903 encounters: 2010)





Holistic approach

“It is much more important to know what sort of a patient has a disease than what sort of a disease a patient has.”

-William Osler



Optimal Healing Environment

Interdisciplinary, Integrative, Holistic & Family Based Care

Patient Intake Factors

Poor Military Performance
Fractured Interpersonal Relations
Reliance on Substances
Physical & mental Pain
Lack of Empowerment

NICoE Goals

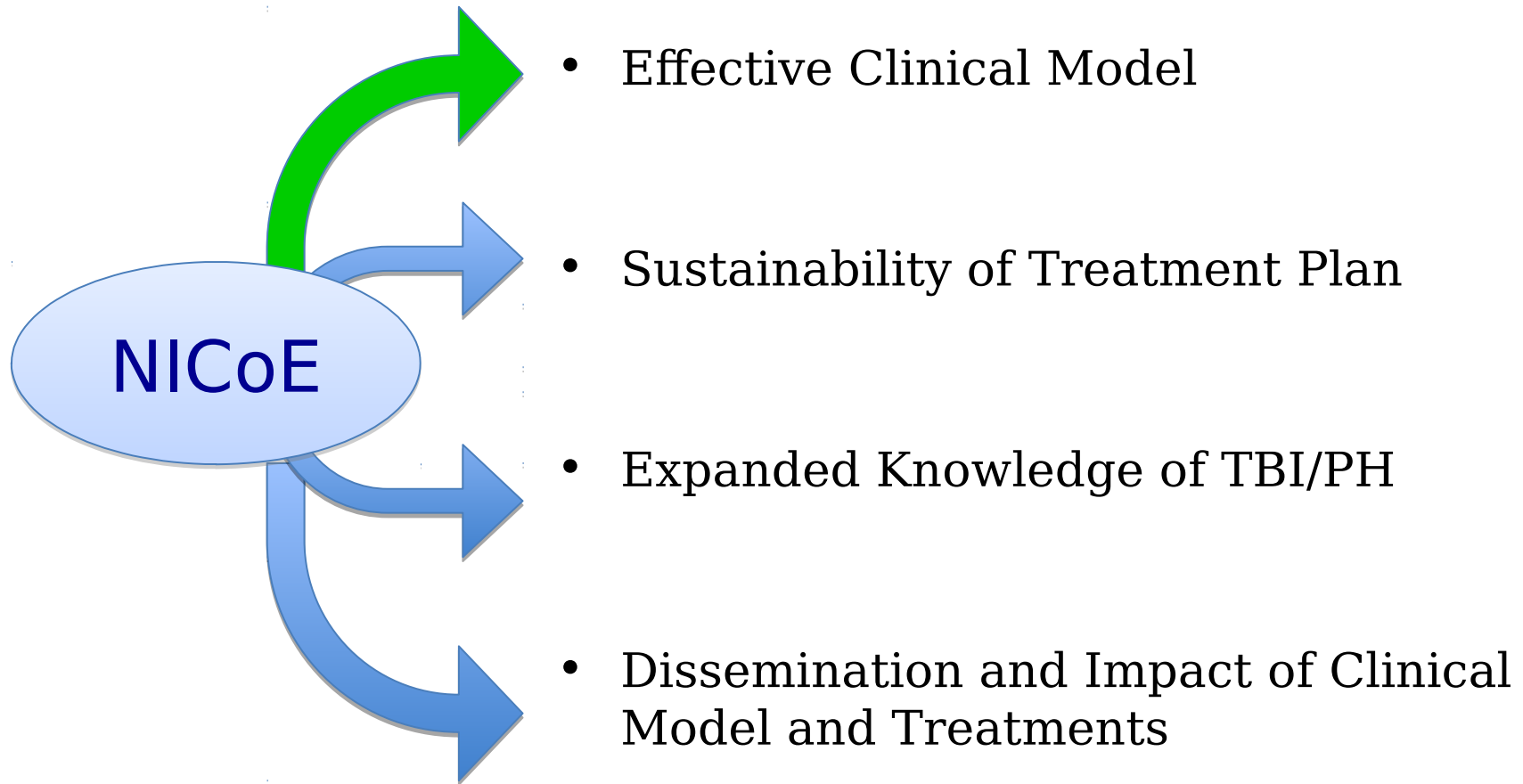
Reduce Impairment
Reduce Disability
Reduce Suffering
Instill Hope

Trajectory of Recovery

Enhanced & Motivated Performance
Recovering Interpersonal Relations
Use of Mind/Body Skills
Reduction in Pain
Self management



NICoE Charge





Multidisciplinary vs Interdisciplinary

Multidisciplinary

- Each discipline approaching from own perspective
- Treatment Prescribed to Patient
- Systems based care model
- Patient recipient of plan

Interdisciplinary



Interdisciplinary Clinical Care Paradigm Overview



- Interdisciplinary Team interview (Day One)
 - Internist, Neuro/Sleep, Psych, Neuropsych, Family Therapy, Chaplain
- First Four days - initial extensive evaluation
- Trajectory of Recovery: An objectives document addressing defined problems, signed by patient and providers
- Extended work-up and initiation trials of integrated treatment modalities over the next two weeks
- Discharge Summary (24 hours prior to d/c)
Warrior/Family and Team meeting



Evaluations

NICoE Clinical Evaluations include:

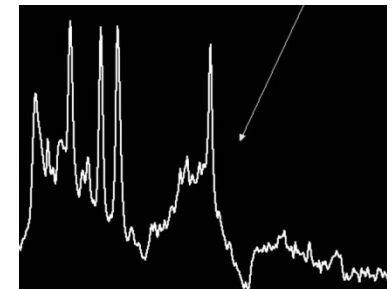
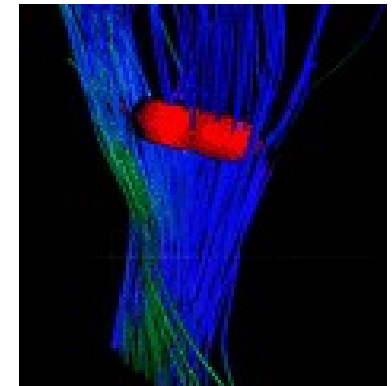
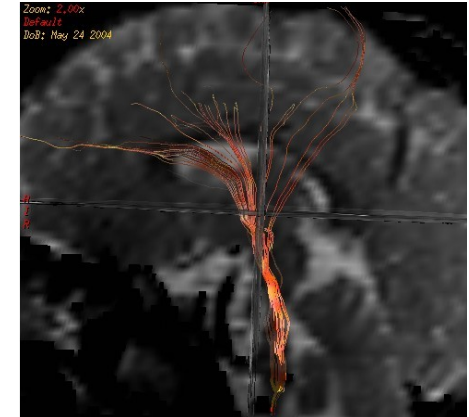
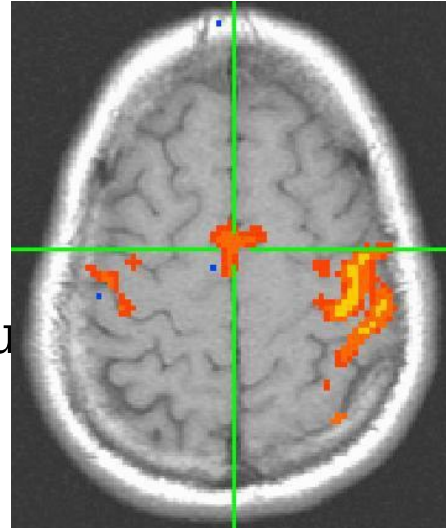
Daily morning & afternoon teaming rounds

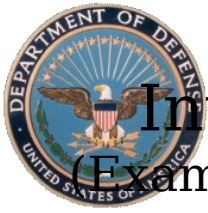
- Physical / Neurological Examination
- Psychiatric / Psychological Health Evaluation
- Physical Rehabilitation Evaluation
- Vestibular / Audiology / Speech Assessment
- Neuro-Ophthalmology Testing
- Electrophysiology (including Sleep Evaluation)
- Clinical Pharmacy Evaluation
- PM&R/OT/PT assessments
- Family Evaluations
- Vocational Testing/Screening
- Neuroimaging Evaluation
- Complementary and Alternative Medicine (CAM)
- Assistive Technology Lab
- Virtual Reality Diagnostic Assessment
- Nutritional Evaluation
- Substance Use Assessment
- Spirituality Consultation



Comprehensive Neuro-Imaging

- Brain Structure
- Brain Lesions
- Brain Function
- Brain Chemistry
- White matter ultrastructure
 - Axonal fiber tracks
- Brain Perfusion





Interdisciplinary Team Directed Trial Therapies

(Examples of potential therapies engaged to define patient response)

- Neurocognitive rehabilitation
- Psychiatric Care/PTSD/PHI: including Exposure Therapy, Cognitive Processing Therapy, Anxiety Management, Imagery
- Neurological Tx: Sleep studies, Headache management
- Vestibular & physical therapy training
- Autogenic Training: Heart Math
- Pain Control: Acupuncture, Relaxation
- Family Therapy: FOCUS
- Wellness: Yoga, Nutrition, Rec, Art & Music Therapy

A Paradigm of exposure to multiple



Observations from 24 patients

- Many individuals with vague vestibular complaints have previously undiagnosed convergence issues.
- Significant contributor of post concussive headaches is myofascial pain which has been commonly relieved by acupuncture
- Psychological resistance and commonly observed defeatist attitude is often diminished with interdisciplinary approach and calming milieu
- Actigraphy and sleep diary/assessment early in the program allows for modification of sleep architecture
- Overwhelming number of patients respond to non-pharmacologic autonomic regulation (Heart Math, Mind Body Skills, acupuncture, Yoga)



“Warm Hand-Off” to Primary Team

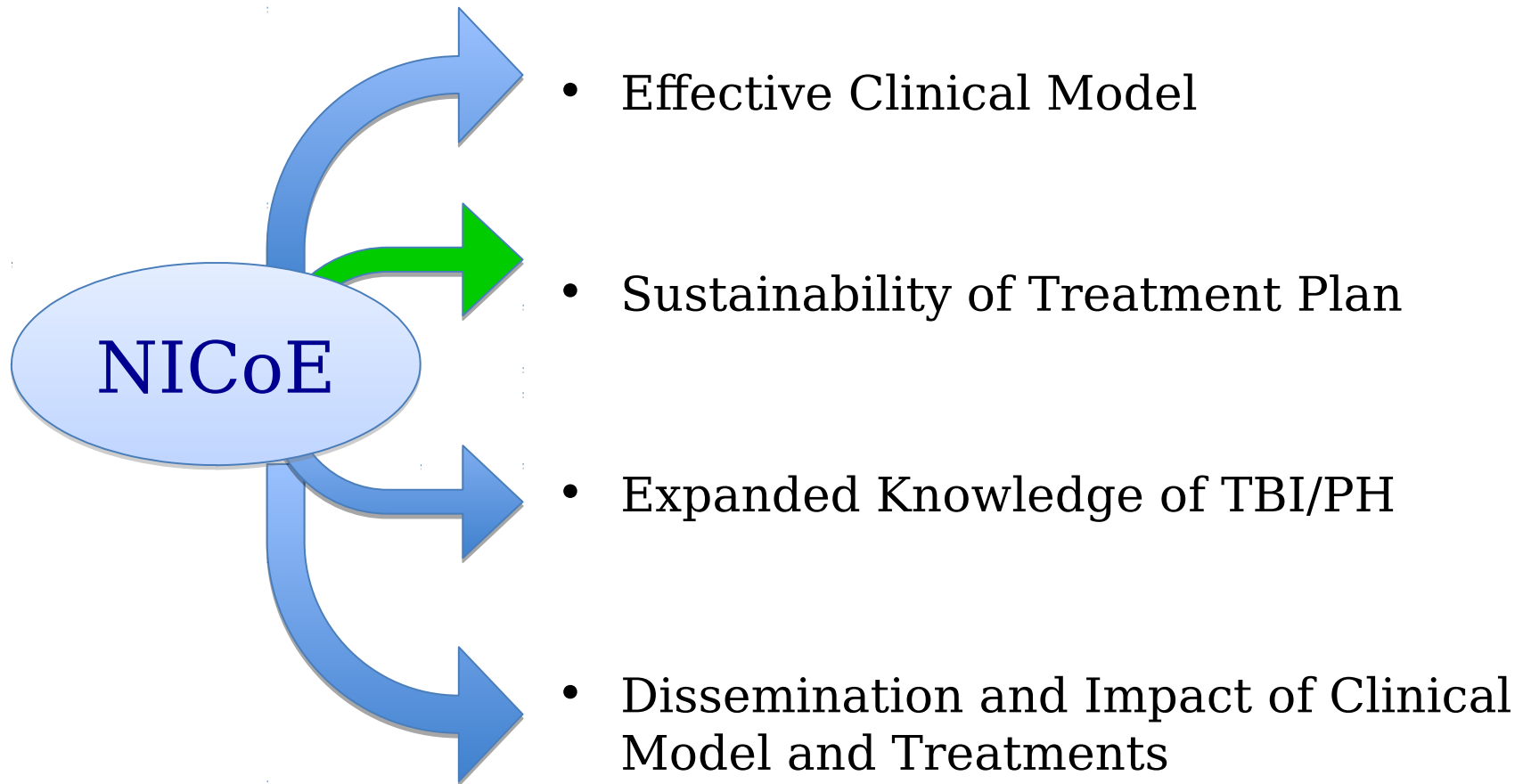
- Interdisciplinary Team Meeting with Service Member and Family Prior to Discharge to Discuss recommendations
- To assure implementation and transfer of recommended plan at home MTF, NICOE will engage a 4 tier communication network.
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Communication Network

- Provider to Provider : Review Discharge Summary and Plan
- Continuity Manager to Case Manager : Assure resource availability
- NICOE Administration to Command : Assure “buy-in” to support recovery plan



NICoE Charge





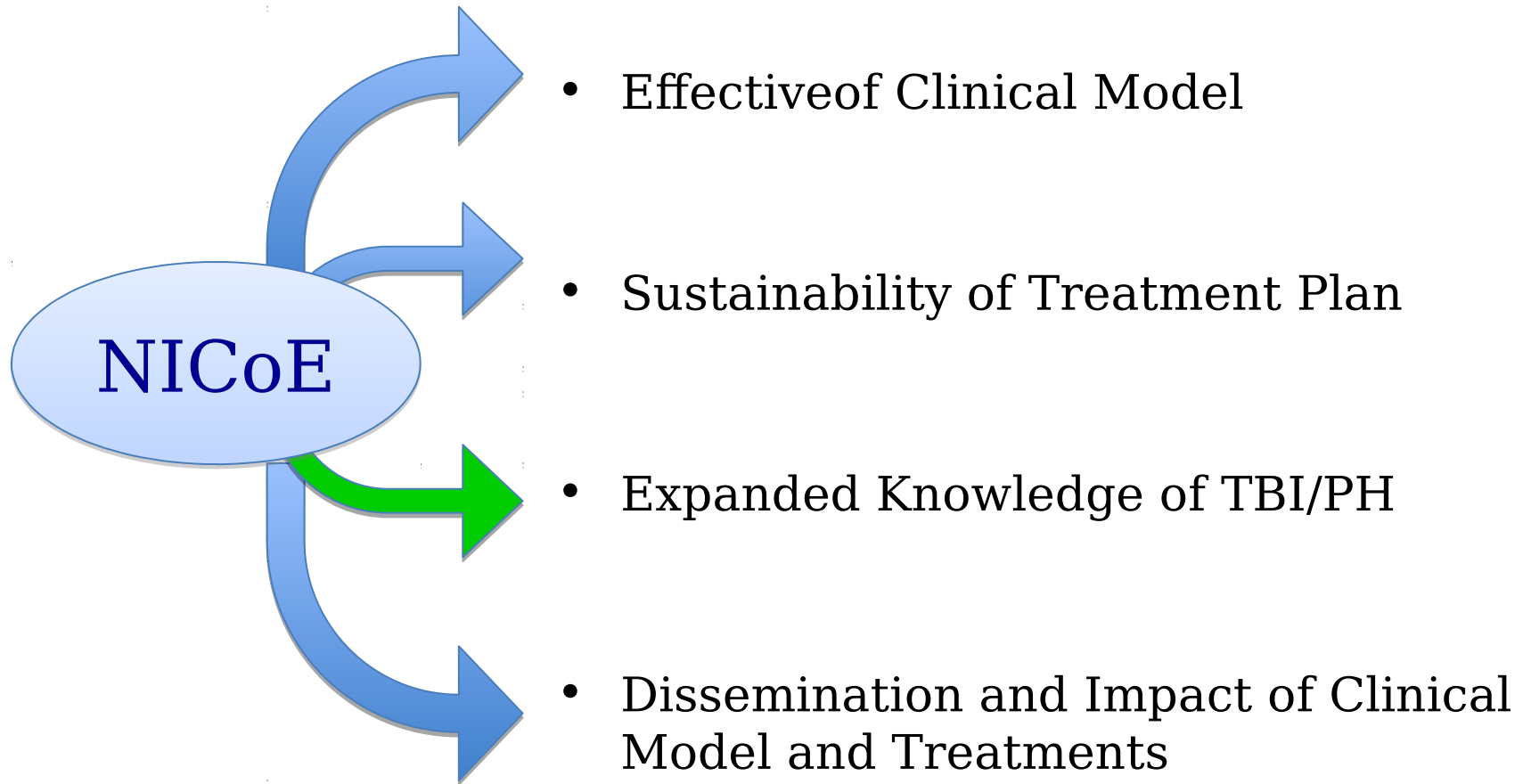
Case Reports...



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NICoE Charge





Research: Data Registry



Platform to de-identify all clinical data from robust evaluation, treatment and outcomes

- Identify complex patterns of the injury state
- Develop Collection Platform for granular capture of clinical data elements: Including Anatomical (imaging), Biochemical (PET, biomarkers, genomics, etc), Physiological, Behavioral, Spiritual & Family assessment
(De-identified data base requires participant consent)
- Provide longitudinal data for Dx, Tx and Outcome.
- Common Data Elements: Quad Agency Initiative to develop common dictionary to enhance collaboration and merging of data sets.

(Willingness to participate in research will NOT impact acceptance to the NICoE nor clinical



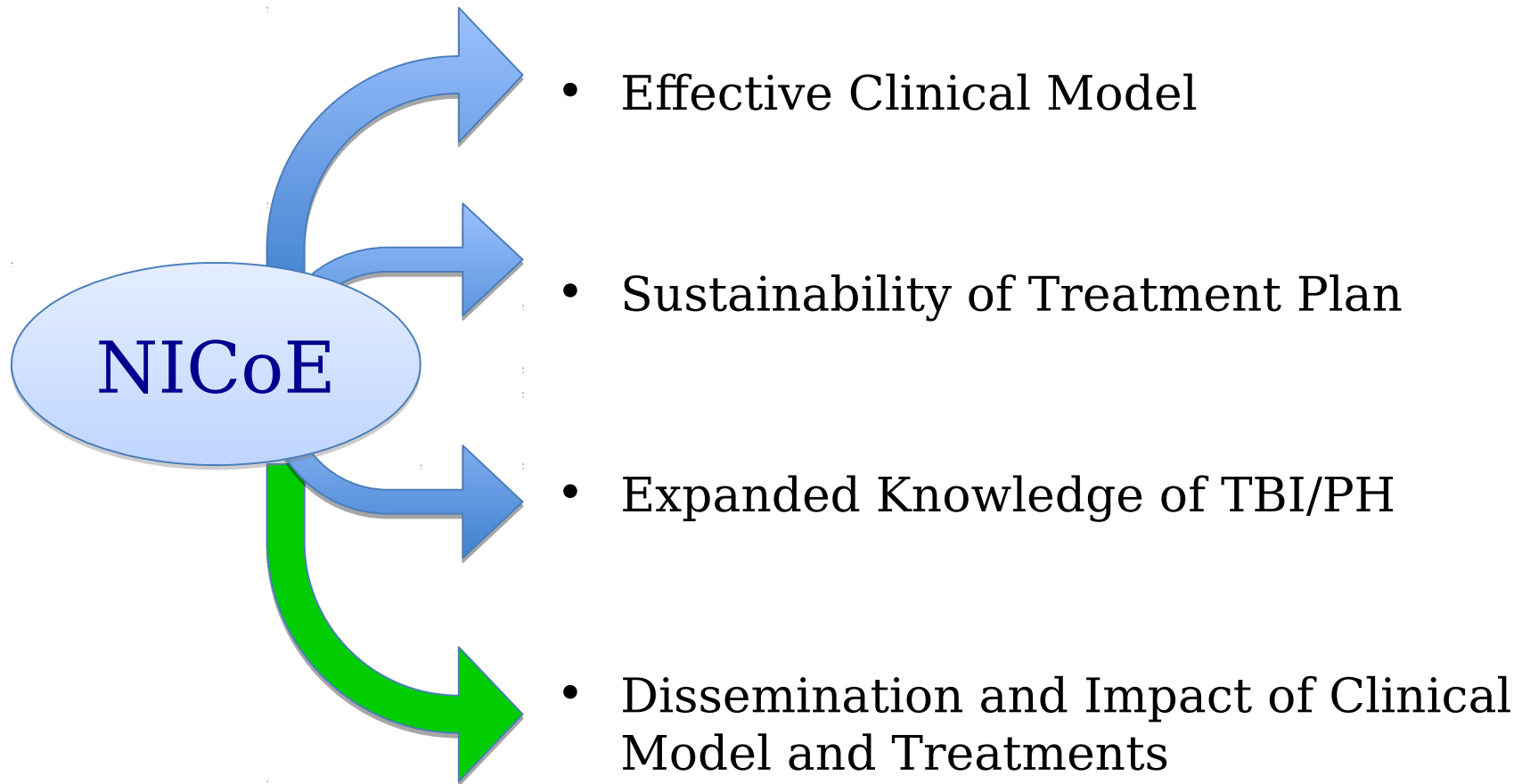
Virtual Iraq

Technology Enhanced Treatment Paradigms





NICoE Charge





Metrics of Efficacy



(Examples of short and long term outcomes)

- Global Outcome Measures:
RTD, Employment, Marital/social engagement, Substance use, SF-36, Success in treatment plan implementation
- Objective Specific: Cognitive Testing, Pain control (Headache: HITS), Psychiatric (PCL, BDI, PHQ), Sleep Inventory, etc.
- MHS Benefit: Impact of Distributive Services
- Care for the health care provider



Questions